

DOCUMENTATION OF THE NORMALLY EXPRESSED BEHAVIOURS OF DOMESTIC GEESE

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ABSTRACT

A study was been planned with the objective of studying and documenting various normally expressed behaviours of domestic geese. It was observed that goose comes into lay once or twice in a year by the month of February and shows excellent broodiness behaviour for efficiently incubating her eggs. Goose and gander are both good parents and rear their young ones together. Geese are mainly grass foragers and liked to eat in a disciplined manner. Socially, geese live in harmony within themselves and with other animals too. Domestic geese were seen to be terrestrial in nature and unlike their wild counter parts, did not show ability to fly. The flocks show gregarious nature and move in an organized manner both on land and in water with the adult gander leading the flock. Other behaviours included extension of neck to its full length, fluttering of wings, feather pecking and shaking movements. Geese were also observed to be preening, rubbing and brushing their bodies with their flexible neck and claws. Besides, they showed a peculiar behaviour of resting on only one leg. The study has provided an insight into the understanding of the behavioral needs of domestic geese which would aid in standardizing the rearing practices on scientific lines and also the production performance of the species taking into consideration ethics and welfare of the species. The study also has importance in characterization of this species.

KEYWORDS: *Geese, Behaviour, Broodiness, Ethics, Laying, Welfare*

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INTRODUCTION

Poultry-sector that has witnessed a spectacular growth across the world has been by and large chicken-centric. Continued selection for high egg-production and fast-growth among layer and broiler type birds respectively, has led to narrowing down of chicken genetic-diversity to the extent that majority of the global poultry-production depends on just a few breeds. There also, only a few breeding magnates that maintain elite grand-parent lines serve as the main source of breeding-stock. Alternate poultry production systems offer a great opportunity of widening the resource-base for the growing poultry industry and at same time providing alternatives to both the producers as well as the consumers. Amongst the various alternate poultry species, geese have been one of the first animal (Buckland and Guy, 2002) as well as the bird species (Deffarges, 1973) to be domesticated by man with remarkable biological characteristics like disease resistance (NRC, 1991), high juvenile growth-rate, high dietary quality of meat, and good adaptation to free-range and grazing (Romanov, 1999). In spite of the fact that geese farming requires meager investments and in return provides supplementary income to the farmer, this sector has been neglected in many countries including India. Literature reveals that meagre scientific studies have been carried out on geese across the world. Lack of scientific knowledge on all aspects of geese production viz. management, nutrition, breeding and health care form some of the major obstacles in development of geese

enterprises. In order to fully exploit the potential of geese sector, standardization of the rearing practices on scientific lines and improvisation of the production performance forms the basic step towards achieving the goal. However, understanding of the behavioral needs of domestic geese would be necessary to make these attempts ethically acceptable and successfully achievable, since full production potential of any animal species can be only tapped when allowed to express its normal behaviour in its comfort zone with minimum exposure to stress factors. Any factor which would lead to deviation in the expression of normal behaviour would count for faulty managerial practices leading to stress and eventually decreased production. A study was therefore carried out to document various behaviors that are normally expressed by the domestic geese in their zone of comfort.

MATERIALS AND METHODS

The study was conducted in the three districts of the Kashmir valley viz Srinagar, Ganderbal and Bandipora. The geese rearing areas in these districts were identified and an extensive study on the domestic geese (*Anser anser domesticus*) being reared there was carried out during the year 2011-2013. Various behavioural observations were carried out on basis of personal observations and video recordings of near about 2306 birds in the field as well as 30 birds kept at the poultry farm of the Division of Livestock Production and Management, SKUAST-K. The inputs regarding their behavior provided by the farmers in a pretested interview schedule during the survey were also obtained.

RESULTS AND DISCUSSION

Various types of normal behaviours expressed by the domestic geese under study are discussed below. The presence or absence of these behaviours among different classes of geese is summarized in table 1 and depicted in figure 1.

Laying Behavior

Domestic goose in the present study was recorded to come into lay once or twice in a year by mid February. Apart from Chinese and Roman geese, which may lay up to 3 – 4 clutches in a year, average goose have been reported to lay 2 clutches in a year (Wurtz, 1995). Wurtz (1995) and Buckland and Guy (2002) also reported that laying commences by the month of February. However, according to Wurtz (1995) earlier production could be induced by good feeding and additional artificial light. According to the surveyed farmers in the present study, if a broody goose after laying first clutch was shut off her nest for few days, it would start laying again in the next two – three weeks. Same was also reported by Wurtz (1995). This could be attributed to the rapid fall of plasma concentration of prolactin hormone upon interrupting the incubation or nesting behavior (Halawani *et al.*, 1988). Same workers have attributed ovarian regression to prolactin induced reduction in circulating concentrations of gonadotropins in turkeys. Jiang *et al.* (2011) have suggested that the reduction in incidence of broodiness by carrying out immunizations related to prolactin may be adopted to increase egg production in geese.

Broodiness

The studied geese showed excellent broodiness behaviour and incubated their eggs well. The brooding behaviour of goose has also been reported by Ensminger (1993) and Wurtz (1995). In birds, prolactin is involved in incubation behaviour and broodiness (Halawani and Rozenboim, 1993). Concentration of plasma prolactin in geese has been reported to increase before the onset of broodiness and decrease during the early half of broodiness, and in the later half of broodiness and post broodiness, plasma prolactin maintains a level approximately the same as that in the laying period of pre-broodiness (Jiang *et al.*, 2011). However, a very few farmers in the present study reported the broodiness behavior of

gander as well, but because of slight aggressiveness and inability to turn eggs properly, ganders were not allowed to incubate the eggs. In doves, both male and female have reported to be incubating the eggs (Goldsmith *et al.*, 1981) and in several other species also males have been seen assisting in incubation (Johnsgard, 1965).

Parenting Behavior

Goose was observed to be a good mother, allowing gosling to brood under its wing feathers, as has also been mentioned by Holleman (1983) and Wurtz (1995). Gander in the present study was also observed to be around assisting goose in rearing and invariably stood around the goose at the time of incubation, as also reported by Johnsgard (1965) and Anonymous (1999). Wurtz, (1995) has reported that gander at times acts as a good mother as well (Wurtz, 1995).

Social Behavior

Geese in the present study were observed to live in harmony within each other and with other animals too. Their temperament was not aggressive and showed good acquaintance with the farmer's family members including children. Their faithfulness and intelligence, as reported by the farmers, brings them back to their respective farmer's home on their own, even after months of staying in the waters. Such behaviour has also been mention by various authors like Wurtz (1995), Anonymous (1999) and Buckland and Guy (2002).

Feeding Behavior

Adult geese as well as goslings under observation foraged on grass unlike chickens as also reported by various authors like Romanov (1999), Buckland and Guy, (2002) and Kumar *et al.* (2009). The grazing behavior of geese contributes in improving rough pasture, eliminating weeds, and improving the growth of grass by the natural manuring of the land (Kumar *et al.*, 2009). All farmers questioned during the survey, had a common opinion that geese consumed a large quantity of feed. So it appeared to be uneconomical to raise geese under intensive system. However, Arslan (2008) has suggested that grazing goslings on pasture would be an economical choice if marketing time was ignored, but if earlier marketing was desired, then supplemental feeding scheme could be practiced in addition to grazing. Hence, grazing behavior of geese can be beneficial to the farmers in two ways; one being sustenance on pasture (Kumar *et al.*, 2009) and another being an effective weed control (Ensminger, 1993; Wurtz, 1995). When feed was offered, flock under study was observed to surround and eat the food in a circle with discipline and harmony among the fellow mates. This might be attributed to their harmonious nature and flocking instinct as mentioned by Buckland and Guy (2002).

Behaviour in Water and on Land

Domestic geese in the present study showed terrestrial nature being equally comfortable on land as in water. Geese, being a water fowl (Kumar *et al.*, 2009) have a liking for water and were seen dipping their head, neck and even body into the waters during observation, as is also supported by the reports of Johnsgard (1965). Terrestrial behavior of geese has also been reported by Buckland and Guy (2002). Flocks were observed to move in a formation both in water and land with adult gander leading the group. This may be attributed to their flocking instinct (Buckland and Guy, 2002) and gregarious nature (Anonymous, 1999). Other behaviours included extension of neck to its full length, fluttering of wings, feather pecking and shaking movements. Geese were observed to be preening, rubbing and brushing their bodies with their flexible neck and claws. The neck extension is reported to be a type of aggressive display in geese (Johnsgard, 1965). The fluttering of wings, shaking, cleaning and snapping movements help to remove water and foreign bodies off the body, and to arrange feathers after wetting in water (Anonymous, 1999). Other elaborate sequence of movements is carried out to

distribute oil on feathers from the uropygial gland above the tail, which is necessary for waterproofing and heat regulation (Anonymous, 1999).

Resting Behavior

Geese were seen to rest/sleep in a peculiar position of standing on one leg and neck curled backwards with bill placed under the feathers. However, birds were seen resting while standing on both legs also, and sometimes even with the neck uncurled too. Geese were observed to sleep while sitting also with or without curling neck backwards. Many birds have been reported to stand on one leg while sleeping (Clark, 1973; Stiefel, 1979). According to Burton (1969), birds do not put their heads under their wings when they sleep, but instead bury the bill into the scapular feathers. He also stated that penguins are the only birds that properly hide the bill under the wing.

Flightlessness

Domestic geese did not show the flying behaviour as was observed during the survey and also reported by the geese rearers. Flightlessness, although not common among birds, is not only a feature of the ratites (e.g., ostriches and emus) and penguins, but has evolved on a number of occasions in rails, geese, ducks, grebes, and ibises (McNab, 1994). The same author points out, flightlessness in terrestrial birds is always associated with a reduction in the mass of the pectoral muscles with a consequent reduction in basal energy consumption, which may be related to overall energy conservation. Although the ability to fly is reduced in many domestic goose breeds especially the heavy ones (Anonymous, 1999) like in Toulouse, Embden, Sebastopol and Saddleback Pomeranian geese (Clauer and Skinner, 2007), they have in many cases retained their ability to fly (Buckland and Guy, 2002) like in African, Pilgrim, American Buff, Chinese, Tufted Roman, Canada and Egyptian geese (Clauer and Skinner, 2007).

CONCLUSIONS

Documentation of various behaviors normally expressed by domestic geese of Kashmir has been carried out in the present study. The study has provided an insight into the understanding of various behavioral needs of domestic geese, which would form the basis for standardization of rearing practices on scientific lines and improvisation of the production performance, taking ethics and welfare of the species into consideration. The information generated is also useful for the characterization of its species as well as breed.

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APPENDICES

Table 1: Presence or Absence of Various Behaviours

S.No.	Type of Behaviour	Males	Females	Gosling
1	Laying behaviour	-	++	-
2	Broodiness	±	++	-
3	Parenting behaviour	+	++	-
4	Social behaviour	+	+	+
5	Grazing behaviour	+	+	+
6	Disciplined eating manner	+	+	±
7	Terrestrial behaviour	+	+	+
8	Leadership	+	-	-

Table 1: Contd.,				
9	Flocking instinct	+	+	+
10	Neck extension	++	+	-
11	Fluttering of wings	+	+	-
12	Feather pecking	+	+	±
13	Shaking movements	+	+	±
14	Preening	+	+	±
15	Resting behaviour	+	+	+
16	Flightlessness	+	+	+
++ Prominently present; + Present ± Sometimes present - Absent				



Figure 1: Various Behaviours of Domestic Geese (a): Feeding Behaviour (b): Geese Swimming and Dipping (Shown by Yellow Arrows) their Heads in Water (c): Geese Walking on Land (d): Extension of Neck (e): Fluttering of Wings (f): Geese Swimming in Discipline (g) Gander (Encircled and Shown by an Arrow) Guarding the Goose Incubating Eggs on a Nest inside a Pen (h): Parenting Behaviour (i): Brooding Behaviour (j): Flexibility of Neck (k): Rubbing with Claws (l): Pecking (m): Sleeping Behaviour while Standing on One Leg (n): Sleeping While Sitting